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Changes in the value relevance of research and development expenses after IFRS adoption

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ABSTRACT

We investigate whether the nature of differences between national GAAP and IFRS is associated with differential changes in the value relevance of R&D expenses after the adoption of IFRS across countries. Using a difference-in-differences study on a sample of public companies in nine countries that covers pre-IFRS and post-IFRS periods during 1997–2012, we find that the value relevance of R&D expenses declines after IFRS adoption in countries that previously mandated immediate expensing or allowed optional capitalization of R&D costs. On the contrary, there is no change in the value relevance of R&D expenses for countries that switched from the mandatory capitalization rule to IFRS. We also investigate the moderating effects of national institutions on the changes in the value relevance of R&D expenses after IFRS adoption. We find that in countries with stronger investor protection, the changes in the value relevance of R&D expenses are larger. In addition, changes in the value relevance of R&D expenses are smaller for countries whose national culture is characterized by higher uncertainty avoidance. Our findings highlight the importance of both accounting standards and national institutions in explaining the changes in the value relevance of accounting information after IFRS adoption.

1. Introduction

While the majority of the early international accounting studies have documented benefits of the adoption of the International Financial Reporting Standards (IFRS), such as improved transparency and comparability, more recent evidence is mixed (De George, Li, & Shivakumar, 2015; Horton, Serafeim, & Serafeim, 2013). An important confounding factor in research on the effects of IFRS adoption is the nature of differences between IFRS and the preceding national generally accepted accounting principles (GAAP). Prior studies either omit or do not directly measure the nature of these differences (Pope & McLeay, 2011).[3] These studies focus on the overall effect of the adoption of IFRS by examining the changes in the relationship between prices/returns and earnings following the adoption of IFRS. One limitation of these studies is that aggregate earnings numbers embody differences in accounting treatments for many items, making it impossible to attribute the changes in the value relevance of the aggregate earnings number following the adoption of IFRS to a particular accounting standard (DeFond, Hung, & Trezevant, 2007). This study extends prior literature by taking a different approach. We focus on the value relevance of one specific accounting item: research and development (R&D) expenses. Specifically, we examine how the value relevance of R&D expenses changes after a switch in the accounting treatment of R&D to IFRS. By narrowing down on one accounting element, we can directly measure the differences in R&D accounting treatments between national GAAP and IFRS, and attribute the changes in the value relevance of R&D expenses to IFRS adoption.

We focus on R&D expenses for two reasons. First, considerable variations in accounting treatments of R&D expenditures existed among countries before they adopted IFRS. The national GAAP on R&D expenditures in European countries and Australia either required expensing R&D costs (the mandatory expensing rule), allowed capitalization of R&D costs (the optional capitalization rule), or mandated capitalization of R&D costs under certain conditions (the mandatory capitalization rule). In comparison, IFRS requires capitalization of development costs when certain conditions are met while mandates immediate expensing of research costs. Second, R&D expenditures are a significant accounting element with enormous uncertainty in its future economic benefits and thus have been the subject of many studies. Prior studies have

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[3] So far, prior studies count the number of accounting items where national GAAP and IFRS differ in accounting treatments. This measure of the differences between IFRS and national GAAP ignore whether these differences increase or decrease earnings and/or net assets (e.g., Ding, Hope, Jeanjean, Stolowy, 2007; Bae, Tan, & Welker, 2008).

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documented that R&D expenses reported in different accounting regimes have different levels of relevance and reliability (Healy, Myers, & Howe, 2002; Zhao, 2002). Therefore, it is interesting to examine how changes in the value relevance of R&D expenses after the adoption of IFRS are related to the nature of differences between pre-IFRS national GAAP and IFRS.

A piece of accounting information is defined as value relevant if it has a predicted association with stock value (Barth, Beaver, & Landsman, 2001). Value relevance research assesses how well accounting amounts reflect information used by equity investors, and provides insights into questions of interest to standard setters. Barth et al. (2001) note that accounting information will be relevant to investors in valuing a company only if it is measured reliably enough to be reflected in share prices. We draw upon prior literature on the economic value of R&D expenditures and value relevance of R&D expenses under different accounting treatments (e.g., Healy et al., 2002; Oswald & Zarowin, 2007). Specifically, we develop three hypotheses on how changes in the value relevance of R&D expenses after the IFRS adoption depend on the pre-IFRS R&D accounting regimes: (1) the value relevance of R&D expenses declines following the switch from the mandatory expensing rule to IFRS; (2) the value relevance of R&D expenses declines following the switch from the optional capitalization rule to IFRS; and (3) the value relevance of R&D expenses increases following the switch from the mandatory capitalization rule to IFRS.

To test our hypotheses, we use a difference-in-differences design to examine the value relevance change after IFRS adoption. We employ both the return and price models to examine the association of reported R&D expenses with stock price and returns. We draw samples over the period of 1997 to 2012 from nine countries that mandatorily adopted IFRS in 2005: Australia, Finland, France, Germany, Netherlands, Norway, Sweden, Switzerland, and the UK.[4] The results from return models show that the value relevance of reported R&D expenses declines after the switch from the mandatory expensing rule or the optional capitalization rule to IFRS. On the other hand, the switch from the mandatory capitalization rule to IFRS does not significantly affect the way markets value reported R&D expenses. The results from price models, however, do not show a significant association between equity price and R&D expenses in our sample before and after the adoption of IFRS.

Ball (2006) points out that accounting is shaped by economic, political, and social institutions, which is echoed by De George et al. (2015). An influential report produced by the Institute of Chartered Accountants in England and Wales (ICAEW) (2015) calls for more research on the links between financial reporting standards, surrounding institutions, and capital market effects. Therefore, in the second half of the paper, we rely on new institutional economics (North, 1991) to guide us to explore how national institutional factors moderate the effects of IFRS adoption on the changes in the value relevance of R&D expenses. As an exploratory analysis, we examine three institutional factors as follows: financial reporting culture, investor protection strength, and uncertainty avoidance in national culture. We find that investor protection strength amplifies the changes in the value relevance of R&D expenses whereas uncertainty avoidance reduces the changes in R&D value relevance following the convergence to IFRS. The specific effects depend on the differences between national GAAP and IFRS.

This study makes three contributions to the literature. First, this study contributes to the growing literature on the effects of IFRS adoption on the value relevance of accounting information. Prior studies have compared the value relevance of earnings before and after the adoption of IFRS and produced mixed evidence on whether the value relevance of earnings has improved following the adoption of IFRS (De George et al., 2015). These studies do not attempt to attribute the differences in the value relevance of the aggregate earnings number to a particular accounting standard. We focus on one specific accounting item: R&D expenses. We find that the changes in the value relevance of R&D expenses after IFRS adoption depend on the preceding national GAAP. Second, we contribute to the international accounting literature by showing that national institutional factors such as financial reporting culture, insider trading law enforcement, and uncertainty avoidance in national culture continue to affect the value relevance of R&D expenses after the adoption of IFRS. Third, our paper contributes to the R&D accounting literature by complementing prior international studies that examine the value relevance of R&D expenses under different accounting regimes across selected countries before IFRS adoption (e.g., Zhao, 2002). We investigate the differential effects of IFRS adoption on R&D value relevance with more sample countries and more recent data. In addition, we examine a different set of national institutions moderating the differential effects of IFRS adoption on R&D value relevance given different accounting regimes before IFRS adoption.

2. Institutional background, prior literature, and hypothesis development

According to the most recent *2014 R&D Magazine/Battelle Global R&D Funding Forecast*, the total spending on R&D around the world is $1.6 trillion, which is about 2% of the worldwide GDP (Battelle, 2013). Companies undertake R&D in the expectation that it will generate significant income from new products and processes. A large number of studies have examined how the capital market interprets the information about R&D expenditures disclosed by companies. Since Hirschey and Weygandt (1985), the accounting literature have documented that both the level of R&D expenditures and the change in R&D expenditures are positively associated with future earnings and market value (e.g., Chan, Lakanishok, & Sougiannis, 2001).

2.1. Institutional background on accounting for R&D

Accounting for R&D activities has been a controversial topic for decades (Hirschey & Weygandt, 1985; Lev & Zarowin, 1999). R&D expenditure is an accounting phenomenon that has significant uncertain future benefits. It is practically difficult to reliably quantify the future economic benefits that can be derived from R&D activities. For this reason, countries such as the USA and Germany generally treat R&D expenditures as expenses regardless of the potential value of R&D activities. Outside the USA, accounting standard setting bodies allow various degrees of capitalization of R&D after weighing on the benefits of capitalizing R&D expenditures and the difficulty of drawing causal relationships between R&D expenditures and future benefits. Considerable variations in accounting treatments of R&D activities existed among countries in the pre-IFRS era. For example, in the UK, research costs and development costs are accounted for differently (Accounting Standards Board, 1989). Companies are permitted, but not required, to capitalize development costs as the projects get closer to commercial success whereas research costs should be expensed during the period incurred.[5] Finland, France, the Netherlands, Norway, and Sweden, on the other hand, allow companies to capitalize both research and

[4] We draw a sample of companies from these nine countries because they are all IASB liaison countries that mandatorily adopted IFRS in 2005. As such, we are able to employ a sufficiently long period of data to assess the changes in the value relevance of R&D expenses after the convergence to IFRS. Furthermore, a large number of firms in these countries regularly report R&D activities.

[5] The accounting standard for R&D (SSAP 13) in the UK was revised in 1989. SSAP 13 states that both pure and applied research are insufficiently identifiable with future economic benefits to be assets and should be written off as incurred. Development expenditures should be written off in the year incurred, unless they meet certain well-defined conditions for deferral. If all of those conditions are met, the development expenditures may be capitalized and amortized as long as their recovery is reasonably assured.

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